Second Finding of *Stylactaria piscicola* (Komai, 1932) comb. nov. (Hydrozoa: Hydractiniidae) from off Atsumi Peninsula, Japan

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With Text-figures 1–8 and Tables 1–3

Abstract The second material of *Stylactaria piscicola* (Komai, 1932) comb. nov. was collected from off Atsumi Peninsula, Aichi Prefecture, Japan. The hydroid attached to a stonefish *Erosa erosa* (Langsdorf), the same host species as the original one. The nematocyst complement, the morphology of spermatozoa, and the chromosome number of male *S. piscicola* are described for the first time together with the external morphology of gastrozooids and gonozooids reared in the aquarium.

A hydractiniid hydroid *Stylactaria piscicola* (Komai, 1932) is a very rare species so far been found only once from Shirahama, Wakayama Prefecture, Japan. Among the members of the genus *Stylactaria* that has so far been called as *Stylactis* (see Calder, 1988, pp. 32–33), *S. piscicola* is the sole species associated with a fish (Bouillon, 1971; Hirohito, H. M. the Emperor Showa, 1988).

S. piscicola was newly collected from the body surface of a stonefish *Erosa erosa* (Langsdorf), the same host species as the original one, which was captured off Atsumi Peninsula. This second material was found by Mr. Motoyasu Masuda of the Hekinan Seaside Aquarium, and he kindly sent to me a part of it, being attached alive to the epidermis, several centimeters square, removed from the host soon after it died. He informed me that this hydroid was found on the dorsal fin of the host at first then the colony spread over the host body surface except its ventral portions and that the host harboring this colony had been kept in the Aquarium at 12–18°C for about two years.

The part of colony sent to me could be kept alive in a 60 cc polystyrene vessel filled with filtered seawater from Oshoro Bay, Hokkaido for only about two weeks at 21°C, and the polyps were fed with *Artemia* nauplii. This short life is attributable to breakdown of the host epidermis and a lack of ability to produce any zooids on a polystyrene vessel, although the hydroid extended stolons on this vessel and its stolons survived for more than a month thereafter. While culturing, the nematocyst equipment, the morphology of spermatozoa, and the chromosome number were examined. These are new taxonomic information of *S. piscicola* and are described in addition to the external morphology of male zooids which show some new character states.

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Stylactaria piscicola (Komai, 1932) comb. nov.

(Figs. 1–8)

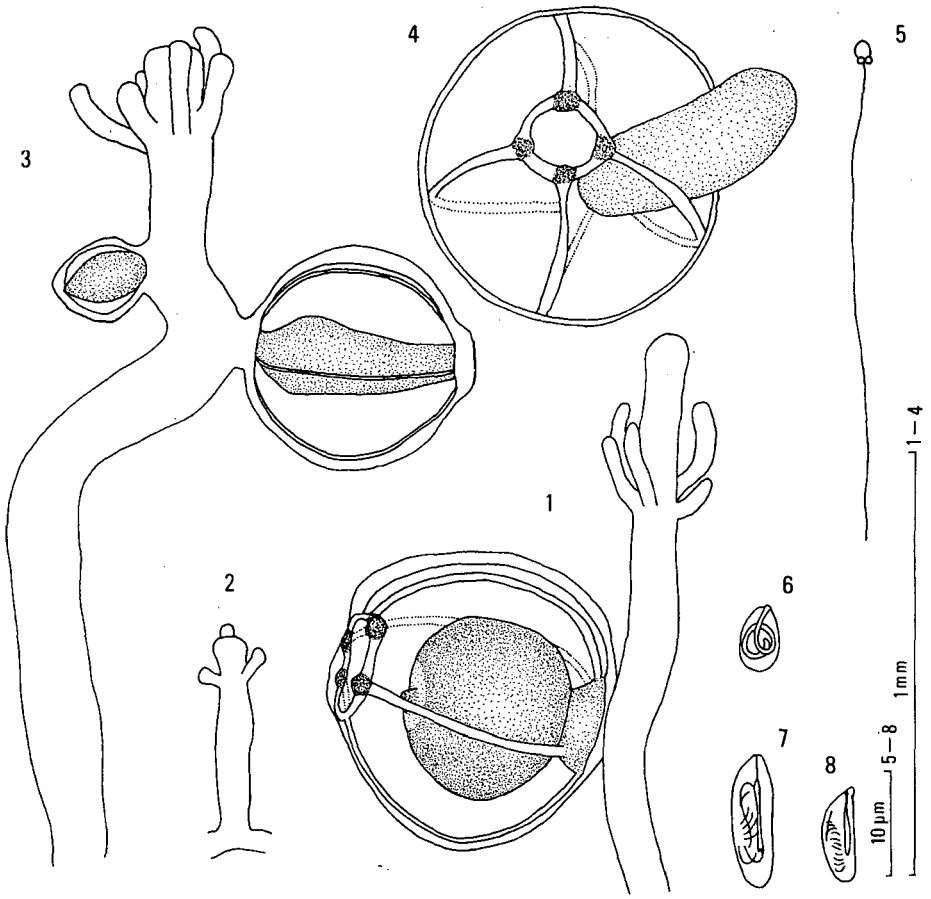
Stylactis piscicola Komai, 1932, p. 445, fig. 1, pl. 27; Yamada, 1959, p. 20.
Stylactella (Stylactis) piscicola Iwasa, 1934, p. 267, fig. 22.

Zooids. The colony is stolonial. The gonozooid with male gonophores and the gastrozooid rise from the loosely reticulated hydrorhiza. The stolon without distinct periderm is 0.075 mm in the maximum width. Table 1 shows the measurements of these zooids. Body heights of both the zooids are nearly the same, but the number of tentacles is more and the body is wider in gastrozooids. The tentacles of gastrozooids tend to be longer than those of gonozooids, and half the number of them extends upward, while the rest extends obliquely or perpendicular to hydrocaulus, differing from the tentacles of gonozooids. The tentacles are of filiform type with rounded tips and are arranged in one whorl in both the zooids. The hypostome of both the zooids is not conical but cylindrical in shape (Fig. 1). Besides these zooids, a tiny zooid (0.44 mm in length, n=3) with only 1–3 tentacles is found (Fig. 2). No gonophores are produced in this zooid.

Gonophore. One gonozooid produces one or two gonophores in an upper portion of its body, *i.e.* 0.20–0.36 in ratio at the position of body from the mouth (Fig. 3; see Table 1). The gonpohore is spherical in shape excluding a short stalk, and a ring canal and four radial canals are formed in it (Figs. 1, 3, 4). The maximum diameter of gonophore was 0.56 mm. Although the liberation of gonophores was not observed, one mature gonophore (Fig. 1) performed pulsation. This gonophore is sporosacs of the eumedusoid type. The spadix of the immature gonophore is

Table 1. Measurements of six gonozooids and four gastrozooids of a male colony of *Stylactaria piscicola*, in mm, taken from the fully-stretched living specimens reared in the laboratory on the 8th day after the host died.

Total length	Max. width	Max. length of tentacles	No. of tentacles	Length from mouth to the middle of stalk of gonophores
Gonozooids				
3.3	0.19	0.35	4	1.2
2.5	0.18	0.35	7	0.50, 0.85
2.1	0.16	0.40	5	0.60
1.8	0.13	0.80	6	0.55
1.5	0.13	0.55	4	0.50
1.4	0.14	0.50	4	0.40
Gastrozooids				
2.6	0.25	0.80	15	—
2.1	0.28	0.90	16	—
2.1	0.22	0.80	13	—
2.0	0.22	0.80	11	—



Figs. 1–8. The morphology of *Stylactaria piscicola*, drawn from life. 1: An upper part of a gonozooid with a fully-matured male gonophore. 2: A tiny zooid with three tentacles. 3: A male gonozooid with two gonophores (the body is contracted and bent). 4: Oral view of a gonophore squashed by a cover slip (the gonads are not drawn due tol puncture). 5: A spermatozoon. 6: A desmoneme on tentacles of gonozooid. 7, 8: The large and small types of microbasic euryteles on mouth of gonozooid (a part of thread is drawn).

yellowish brown in color.

Spermatozoon. Ten spermatozoa (Fig. 5) were measured immediately after stopping the movement by adding a drop of 5% formalin. The length from head to middle piece was 2.6 ± 0.1 µm (2.6–2.8 µm), the maximum width of head was 2.1 ± 0.1 µm (2.0–2.2 µm), and the length of tail was 46 ± 1 µm (45–48 µm).

Nematocyst. Two kinds of nematocysts, desmonemes and microbasic euryteles, are found in gastrozooids and gonozooids, and microbasic euryteles of large and small types are demarcated in both the zooids (Figs. 6–8). Table 2 shows the distribution of these nematocysts according to the body portion in both the zooids. The measurements of nematocysts are shown in Table 3. The size range of two types

Table 2. Different distribution of nematocysts according to the body portion of gastrozooids or gonozooids of *Stylactaria piscicola*.

	Desmonemes	Microbasic euryteles	
		Large type	Small type
Mouth		+	
Tentacles	+		+
Other body portions	+	+	+

Table 3. Measurements of undischarged capsules of nematocysts of *Stylactaria piscicola*: mean±SD and range of length (L) and maximum width (W), in μm.

Nematocyst	Measurements	Sample size	Body portions of zooids examined
Desmonemes	L: 6.4±0.2 (6.0– 6.6) W: 3.4±0.1 (3.2– 3.6)	n = 8	tentacles of 2 gonozooids
	L: 6.2±0.4 (5.6– 6.6) W: 3.3±0.1 (3.2– 3.6)	n = 12	tentacles of 2 gastrozooids and 1 tiny zooid
Large type of microbasic euryteles	L: 13.4±1.2(11.2–16.0) W: 4.2±0.3 (3.8– 4.8)	n = 15	mouth of 2 gonozooids
	L: 12.9±1.3(11.2–15.2) W: 4.2±0.2 (3.8– 4.8)	n = 14	mouth of 2 gastrozooids and 1 tiny zooid
Small type of microbasic euryteles	L: 9.3±0.8 (8.6–11.2) W: 3.3±0.3 (2.8– 4.0)	n = 8	tentacles of 2 gonozooids
	L: 9.3±0.8 (8.8–11.6) W: 3.2±0.3 (2.8– 4.0)	n = 11	tentacles of 2 gastrozooids and 1 tiny zooid

of microbasic euryteles overlapped since the large nematocyst was found on the tip of tentacles of both the zooids.

Chromosome. The chromosome number was determined in one male gonophore, following an ordinary air-drying method and stained by Giemsa solution. Among 12 cells, nine show 2n=30, while the other three show 2n=29, 27, and 26, respectively.

Remarks. The present specimen differs from the original one in the following morphological characters: 1) the gonophores are not produced on the basal half of body of gonozooid, but on the upper part of it; 2) the ring canal is formed in the gonophore; 3) the gastrozooids are smaller and have smaller number of tentacles, and 4) no spines are found on the stolon. However, these differences may be ascribed to a sexual difference or to the difference of the developmental stage between the two, since the original specimen was female and it was not fully matured (see Komai, 1932, p. 451).

When cultured, many gastrozooids changed into the gonozooids. This indicates that the colony consists of only one type of zooid.

Host and distribution. This hydroid is endemic to Japan and its host is only one species, a stonefish *Erosa erosa* (Langsdorf) (Komai, 1932; Iwasa, 1934; Yamada

1959; Bouillon, 1971; Hirohoto, H. M. the Emperor Showa, 1988). The original host specimen taken in the littoral of Shirahama, Wakayama Prefecture, in April 1932, is small, measuring ca. 11 mm in total length (Komai, 1932). The present second host was collected by a fisherman in the sea off Atsumi Peninsula, Aichi Prefecture, at a depth of 150–200 m on June 12, 1985. This host was large, measuring 174.2 mm in total length and 149.3 mm in body length when it died on May 18, 1987 (Masuda per. comm.).

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